

## PATENT SPECIFICATION



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## PROVISIONAL SPECIFICATION

No. 8524 A.D. 1937.

## Improvements in or relating to Gas-heated Grillers

We, THE GAS LIGHT & COKE COMPANY, a British Company, PHILIP HOWARD PEARCE, a British Subject, and ERIC WILLIAM BEE DUNNING, a British Subject, all of 84, Horseferry Road, Westminster, London, S.W.1, do hereby declare the nature of this invention to be as follows:—

This invention is for improvements in or relating to gas-heated grillers and has for one of its objects to provide a grilling unit having good heat-radiating properties.

According to this invention, a grilling unit arranged to be heated by one or more gas burners comprises a wire radiating element or elements arranged to present a sufficient radiating surface to effect grilling and means for locating said element or elements in the path of the flames from said burner or burners so as to render said wire element or elements incandescent. Preferably, said wire element or elements is or are tubular in form, for example, helical.

The grilling unit may be arranged for use with a burner or burners having a number of burner orifices and when a number of tubular wire elements are employed the open ends of said elements are so arranged that the flames from the burner orifices enter the interior of the elements.

A feature of the invention consists in disposing one or more metal reflectors on one side of said element or elements so as to reflect the radiant heat on to the material to be grilled.

The aforesaid radiating element may be arranged to present a horizontal grilling surface, in which case the said reflector or reflectors are arranged above the element or elements.

In one preferred form of construction, a horizontal burner tube is employed hav-

ing a number of burner orifices disposed along one or both sides thereof and there are provided a number of horizontal tubular wire elements arranged side-by-side so that one element is arranged opposite each orifice.

The grilling unit may be formed from a metal plate which is punched and pressed so as to provide a number of pairs of flanges which form a number of channels separated by spaces in each of which channels is disposed a wire radiating element. In such an arrangement, means are provided for locating said plate in a horizontal position with said flanges directed downwardly and in such relation to the burner that one end of each channel is disposed opposite a burner jet, whereby said elements are rendered incandescent when said burner is alight. It will be appreciated that with this arrangement the downwardly-directed flanges ensure that the whole of the wire radiating element is rendered incandescent. The products of combustion will flow around the edges of the flanges up through the aforesaid spaces. The radiant heat from the upper part of the wire elements will to a large extent be reflected downwardly by the interior surface of the channel. The wire radiating elements may be retained in position in the channels by means of lugs pressed out of the metal of the plate and bent into engagement with the elements. As already indicated above, the elements are preferably helical in form. The above arrangement is particularly suitable for use with gas cookers.

Dated this 23rd day of March, 1937.

BOULT, WADE &amp; TENNANT,

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No. 9728 A.D. 1937.

## PROVISIONAL SPECIFICATION

No. 9728 A.D. 1937.

## Improvements in or relating to Gas-heated Grillers

We, THE GAS LIGHT & COKE COMPANY, PHILIP HOWARD PEARCE, a British Subject, and ERIC WILLIAM BEE DUNNING, a British Subject,

all of 84, Horseferry Road, Westminster, London, S.W.1, do hereby declare the nature of this invention to be as follows:—

- This invention is for improvements in or relating to gas-heated grillers, particularly, but not exclusively, for use on gas cookers and of the kind comprising one or more horizontally disposed perforated frets underneath which the food to be grilled is placed. In such an arrangement the flames from a burner or burners are directed along the underside of each fret which is provided with a number of projections in the path of the laterally-directed flame and with a number of perforations which permit the products of combustion to pass up through the fret; the material to be grilled is placed beneath each fret.
- According to this invention, a gas-heated griller of the kind referred to above is characterised in that a metal shield plate is disposed above said fret or frets and in that a number of heat-conducting or heat-scrubbing members are arranged to extend between said shield plate and frets. Preferably the aforesaid members are formed integral with the shield plate which may be formed from cast metal.
- The shield plate thus performs a dual function; it prevents the frets from becoming contaminated and it also operates as a hot plate. Preferably, the shield plate also extends over the burner.
- The shield plate may be flat save for its marginal portions which are arranged to extend downwardly. Apertures may be formed in the marginal portions, for example, in those portions most remote from the burner. Thus the hot gases which find their way through the perforated frets are collected beneath the shield plate and ultimately find their way out through the apertures in the marginal portions of

the plate.

The frets may be fashioned from sheet metal and the projections on the underside of the frets and the perforations may be formed by pressing lugs out of the metal and by bending them downwardly.

The lugs may be arranged in rows extending in a direction transverse to the length of the burner. In an arrangement in which a straight burner tube is employed having burner orifices extending along a side thereof, the rows of lugs are so disposed that there is arranged opposite each burner orifice a channel between two adjacent rows of lugs.

Two adjacent rows of lugs may be formed by cutting a number of transverse slits between two parallel lines spaced apart a distance equal to double the length of the lugs and extending in the direction of said rows and cutting further longitudinal slits joining the ends of alternate pairs of slits, the longitudinal slits along the one parallel line being in staggered relationship to those along the other parallel line. Alternate lugs are then bent down at an angle on both sides of a central line running between the two parallel lines and form a channel.

In an arrangement in which burner orifices are provided on both sides of the burner, two frets are provided, one on each side of the burner, and a single shield plate may be arranged to extend over both frets and over the burner.

The shield plate may be provided with sides and a bottom so as to form an enclosed box having a front opening through which the food to be grilled is inserted.

Dated this 6th day of April, 1937.

BOULT, WADE & TENNANT,

Chartered Patent Agents,  
111 & 112, Hatton Garden, London, E.C.1.

## COMPLETE SPECIFICATION

### Improvements in or relating to Gas-heated Grillers

- We, THE GAS LIGHT & COKE COMPANY, a British Company, PHILIP HOWARD PEARCE, a British Subject, and ERIC WILLIAM BEE DUNNING, a British Subject, all of 84, Horseferry Road, Westminster, London, S.W.1, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

- This invention is for improvements in or relating to gas-heated grillers and has for one of its objects to provide a grilling unit having good heat-radiating properties.

According to this invention, a metal grilling fret for use with a multi-teat burner comprises a number of open-ended inverted channels so spaced apart and arranged that the flames from the burner may be directed into and along the channels, which channels are separated by outlet openings for the burnt gases and have associated therewith heat-radiating elements arranged to lie in the path of the flames along the channels.

The grilling fret may be formed from sheet metal and said channels and outlet openings may be formed by slitting the metal sheet and bending over a number of



flanges.

The heat-radiating element may comprise a helical coil of heat-resisting metal wire disposed along each channel. Alternatively, the heat-radiating element may be formed by projections on the walls of the channels, for example, the projections may be pressed out of the metal of said walls.

10 The aforesaid outlet openings may be so arranged as to leave the inverted channels connected together by transversely extending bars whereby a rigid structure is provided.

15 The upper walls of the inverted channels may be provided with a number of external projections which may serve to support a cooking utensil above them.

20 The above-mentioned constructions are particularly suitable for use with a hot-plate having a surrounding cornice and when so used, the upper walls of the inverted channels are arranged substantially in the plane of or slightly below the plane of the cornice.

25 Two gas burners may be arranged, respectively, at opposite ends of said channels and the grilling frets may be detachably supported on said burners.

30 In an arrangement in which the grilling frets are not required to support cooking utensils, a metal shield-plate may be disposed above said fret and may be provided with a number of heat-conducting or heat-scrubbing members arranged to extend between it and the upper walls of said channels. The heat-conducting or-scrubbing members are preferably formed integral with the shield-plate which is fashioned from cast metal. The shield-plate thus performs a dual function; it prevents the frets from becoming contaminated and it also operates as a hot-plate. Preferably, the shield-plate also extends over the burner. The shield-plate may be flat save for its marginal portions which are arranged to extend downwardly. Apertures may be formed in the marginal portions, for example, in those portions most remote from the burner. Thus, the hot gases which find their way between the channels are collected beneath the shield-plate and ultimately find their way out through the apertures in the marginal portions of the plate.

55 The following is a description of two alternative constructions according to the present invention, reference being made to the accompanying drawings, in which:—

60 Figure 1 is a perspective sectional view through a hot-plate having a sheet-metal fret with which is associated wire heat-radiating elements.

65 Figure 2 is a section on the line 2—2 of Figure 1, and

Figure 3 is a sectional perspective view of a hot-plate having a sheet-metal fret in which the heat-radiating elements are formed integral with the fret.

Referring to the construction shown in 70 Figures 1 and 2, the sheet-metal fret comprises a number of inverted channels 10 arranged parallel with one another and spaced apart by a number of elongated outlet apertures 11. These channels and 75 apertures are formed by slitting the sheet metal and bending down flanges 12. The slitting of the sheet metal is so arranged as to leave the channels connected together at their ends and intermediate of their 80 ends by transversely extending cross-bars 13. The marginal edges of the fret are provided with a downwardly directed flange 14. The upper walls 15 of the inverted channels have pressed in them a 85 number of external projections 16.

As will be seen from Figure 2, two burners 17 are arranged to extend across the ends of the channels. The burners are provided with a number of burner teats 90 and the channels are spaced apart so as to register with said teats. The walls 12 of the channels may be cut away so as to rest on the upper part of said burners. Alternatively, a single burner having a row of 95 burner teats on each side thereof might be arranged to extend centrally across and beneath said channels.

The fret may be wholly or partly surrounded by a cornice 19 and it will be 100 noted from Figure 2 that the upper walls of the channels are arranged in the plane of the upper face of the cornice, while the projections 16 extend above said face. Extending along the mouth of each channel 105 is a radiating element 20 formed from heat-resisting iron wire. The elements are semi-cylindrical in configuration and each is built up of a coil of wire having its semi-circular portions directed down- 110 wardly and having diametrical portions interwoven with straight wires which extend along the length of the channels. As best seen in Figure 2, the ends 22 of the straight wires extend beyond the coils and 115 are gripped between the burners 17 and the marginal portion of the fret.

As will be seen from Figure 1, the sides 12 of the channels diverge as they extend downwardly from the upper walls 15. 120

The construction shown in Figure 3 differs from that last described above in that the side walls 12 of the channels converge as they extend from the upper walls 15 and are slit in a zig-zag manner to provide a number of inwardly bent lugs 21 125 in the path of the flames which pass along the channels from the burners. These inwardly directed lugs provide heat-radiating elements in place of the wire radiating 130

elements 20 described above.

The above constructions enable the gas burners to be arranged close to the upper surface of the fret and this increases the efficiency of the grid, both as a grilling element and as a hot-plate.

Instead of the fret being arranged in the general plane of the upper face of the cornice it may be sunk beneath it and there may be disposed above the fret a metal shield-plate having a number of downwardly extending projections which serve to support it on the upper walls of the channels. As already indicated, the shield-plate thus performs a dual function; it prevents the fret from becoming contaminated and also operates as a hot-plate. The marginal portions of the shield-plate may be provided with apertures through which the hot gases which collect beneath the shield-plate find their way to the atmosphere.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. A metal grilling fret for use with a multi-teat burner comprising a number of open-ended inverted channels so spaced apart and arranged that the flames from the burner may be directed into and along the channels, which channels are separated by outlet openings for the burnt gases and have associated therewith heat-radiating elements arranged to lie in the path of the flames along the channels.

2. A sheet-metal grilling fret according to claim 1, wherein said channels and outlet openings are formed by slitting the metal sheet and bending over a number of flanges.

3. A metal grilling fret according to either of the preceding claims, wherein said radiating elements each comprises a helical coil of heat-resisting metal wire disposed along the channel.

4. A metal grilling fret according to claim 1 or claim 2, wherein said heat-radiating elements are formed by projections on the walls of the channels.

5. A sheet-metal grilling fret according to claim 2, and claim 4, wherein said pro-

jections are pressed out of the metal of said walls.

6. A metal grilling fret according to any of the preceding claims, wherein the outlet openings are so arranged as to leave the inverted channels connected together by transversely extending bars.

7. A metal grilling fret according to any of the preceding claims, wherein the upper walls of the inverted channels are provided with a number of external projections.

8. The combination with a hot-plate having a surrounding cornice of a metal grilling fret as claimed in any of the preceding claims arranged with the upper walls of the inverted channels substantially in the plane of or slightly below the plane of the cornice.

9. The combination with a grilling fret according to any of claims 1 to 7 of two gas burners arranged, respectively, at opposite ends of said channels.

10. The combination according to claim 9, wherein said grilling fret is detachably supported on said burners.

11. The combination with a metal grilling fret according to any of the preceding claims of a metal shield-plate disposed above said fret and having a number of heat-conducting or heat-scrubbing members arranged to extend between it and the upper walls of said channels.

12. The combination according to claim 11, wherein said heat-conducting or heat-scrubbing members are formed integral with the shield-plate which is fashioned from cast metal.

13. The combination according to claim 11 or claim 12, wherein the shield-plate is provided with apertures along its marginal portions.

14. A sheet-metal fret substantially as shown in either of Figures 1 and 2, or in Figure 3.

15. A gas-heated griller substantially as described.

Dated this 6th day of April, 1938.

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[This Drawing is a reproduction of the Original on a reduced scale.]









